

An aerial photograph of a large cargo ship and a four-engine airplane flying over the ocean. The ship is in the upper center, moving towards the bottom right. The airplane is in the lower right, flying towards the top left. The water is a deep teal color. The sky is a lighter teal. The overall composition is dynamic and suggests global connectivity and logistics.

Saxo Market Call – SPECIAL EDITION DEEP DIVE

May 29, 2023 (recorded May 24)

Questions and comments to marketcall@saxobank.com

Disclaimer

The slides here that accompany the podcast will occasionally mention financial instruments that are not tradable for all retail clients, depending on the relevant appropriateness test. Financial instruments mentioned can range from low to high risk, and our thoughts on the market should not be viewed as investment recommendations, but inspiration and information to gain a better understanding of current market dynamics.

SAXO
BE INVESTED

Deep dive into commodities via futures and stocks

- The history of commodities and the current commodity market
- How do investors get exposure to commodities?
- Backwardation and contango in commodity markets
- Exposure to commodities via ETCs and stocks
- Electrification: lithium and copper
- Commodities in an asset allocation portfolio
- Commodity outlook
- Q&A and survey



The history of commodities

History. Commodity-based money and commodity markets in a crude early form are believed to have originated in Sumer between 4500 BC and 4000 BC. Sumerians first used clay tokens sealed in a clay vessel, then clay writing tablets to represent the amount—for example, the number of goats, to be delivered.

Wikipedia
https://en.wikipedia.org/wiki/Commodity_market

Commodity market - Wikipedia

Futures Trading in Ancient Greece

Mesopotamia doesn't get all the credit for the history of futures trading. Ancient Greeks also got involved.

We know about ancient Greek futures trading because it's mentioned in Aristotle's *Politics*, where Aristotle tells the story of Thales, a poor philosopher from Miletus who created what's described as a "financial device, which involves a principle of universal application."

Modern Futures Trading in Japan

Japan is credited with creating the first futures exchanges in the modern era. Japan's futures markets can be traced back to 1700s at the Dojima Rice Exchange in Osaka.

The United States got its earliest official commodity trading exchange in the West in 1848. The Chicago Board of Trade (CBOT) was created as railroads and the telegraph service established fast connections from the agricultural marketplace hub of Chicago to New York and other cities in the eastern U.S. 9 Oct 2022

Investopedia
<https://www.investopedia.com/ask/answers/what-his...>

What Is the History of Futures? - Investopedia

Three major categories

Energy:

Crude oil
Gasoline
Diesel
Jet Fuel

Natural gas
Coal
Power
Emissions

Metals:

Precious metals:

Gold
Silver

Platinum Group Metals (PGM):

Platinum
Palladium

Industrial metals:

Copper
Aluminum
Nickel
Zinc
Tin
Lead

Others:

Cobalt
Lithium
Uranium
Silicon
Graphite

Agriculture:

Grain and oilseeds:

Wheat
Corn
Soybeans, meal and oil
Rapeseeds
Canola
Rice

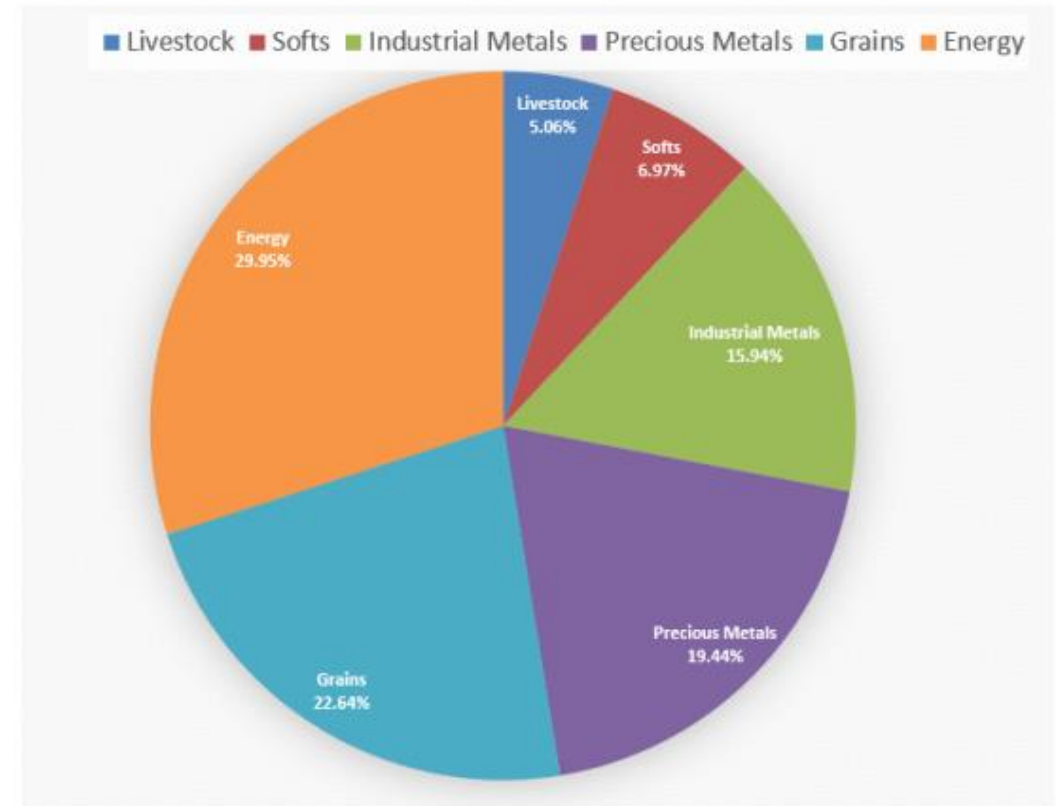
Softs:

Sugar
Cocoa
Coffee
Cotton
Orange Juice
Lumber
Rubber
Wool

Livestock:

Hogs and cattle

Table 1: The Bloomberg Commodity Index—2023 Target Weights



How to get exposure to commodities?

- Physical commodities
- Commodity futures, options on futures, CFDs on futures
- Stocks in commodity companies
- ETFs/ETCs on basket of stocks or futures

Gold futures contract

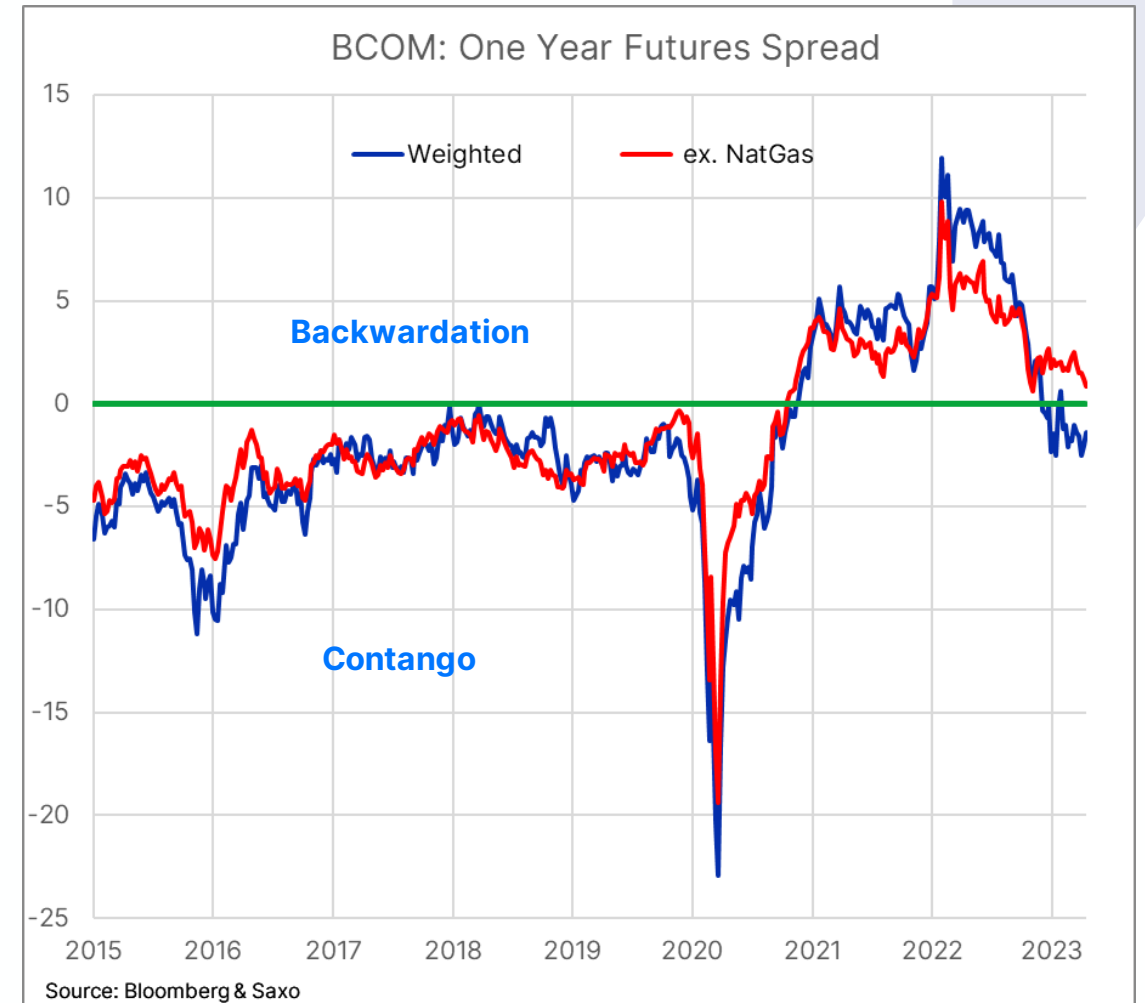
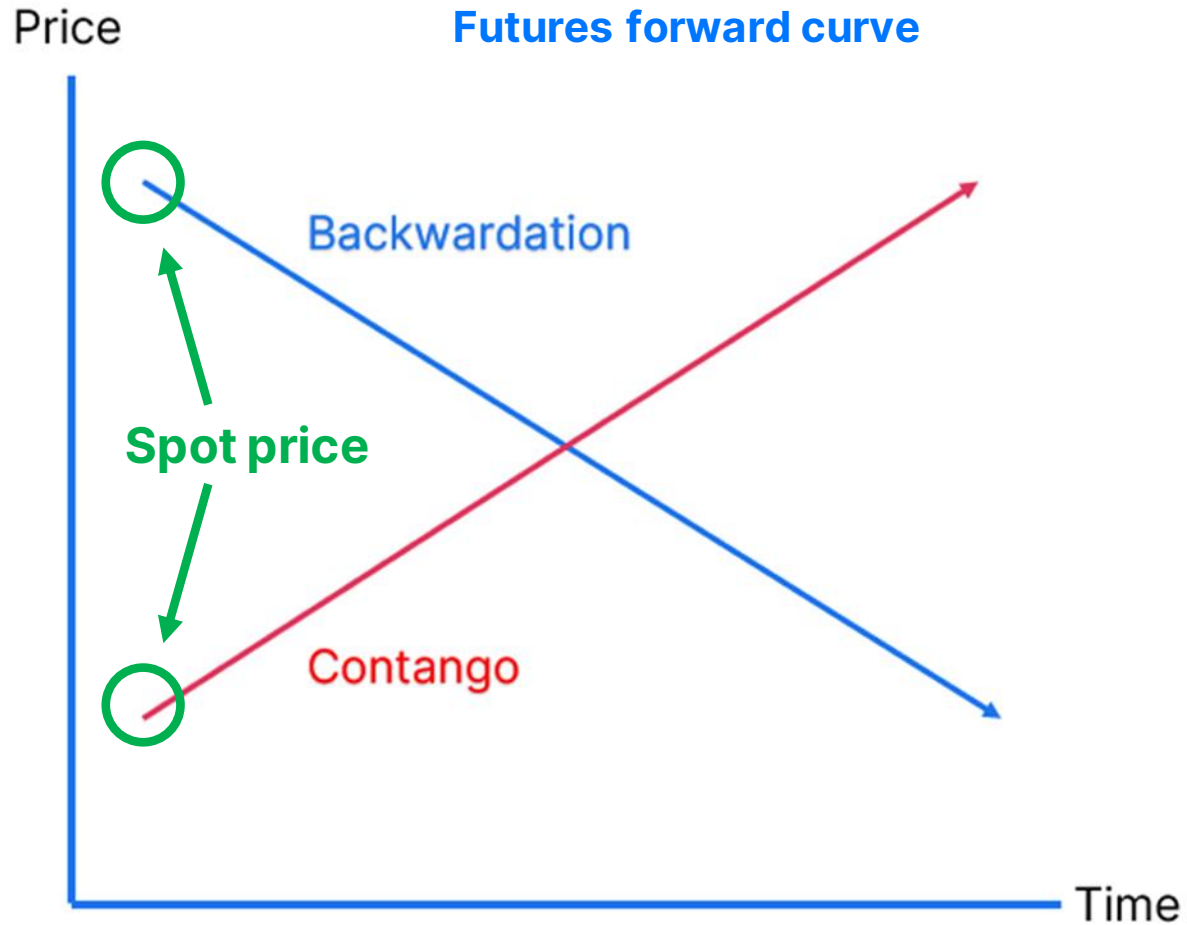
FU	Gold - Jun 2023			
	28-Jun-2023 GCM3 USD			
Bid	Ask	Last traded	Net change	%
1,961.0	1,961.1	1,961.0	-16.2	
Commodity Exchange (COMEX) Open				
Type	<	Limit	>	
Buy/Sell	<	Buy	>	
Quantity	-	1	+	
Price	-	1,961.0	+	
Duration	<	G.T.C.	>	
Add Take profit / Stop loss				
Place order				
Hide Details				
Trade fees			7.57 USD	
Nominal value			196,100.00 USD	
Initial margin available			-5,276.87 EUR	
Initial margin impact			8,452.05 EUR	
Maintenance margin impact			7,683.68 EUR	
Expiry date			28-Jun-2023	
Notice date			31-May-2023	
Contract size			100 Troy Oz.	

Gold CFD contract

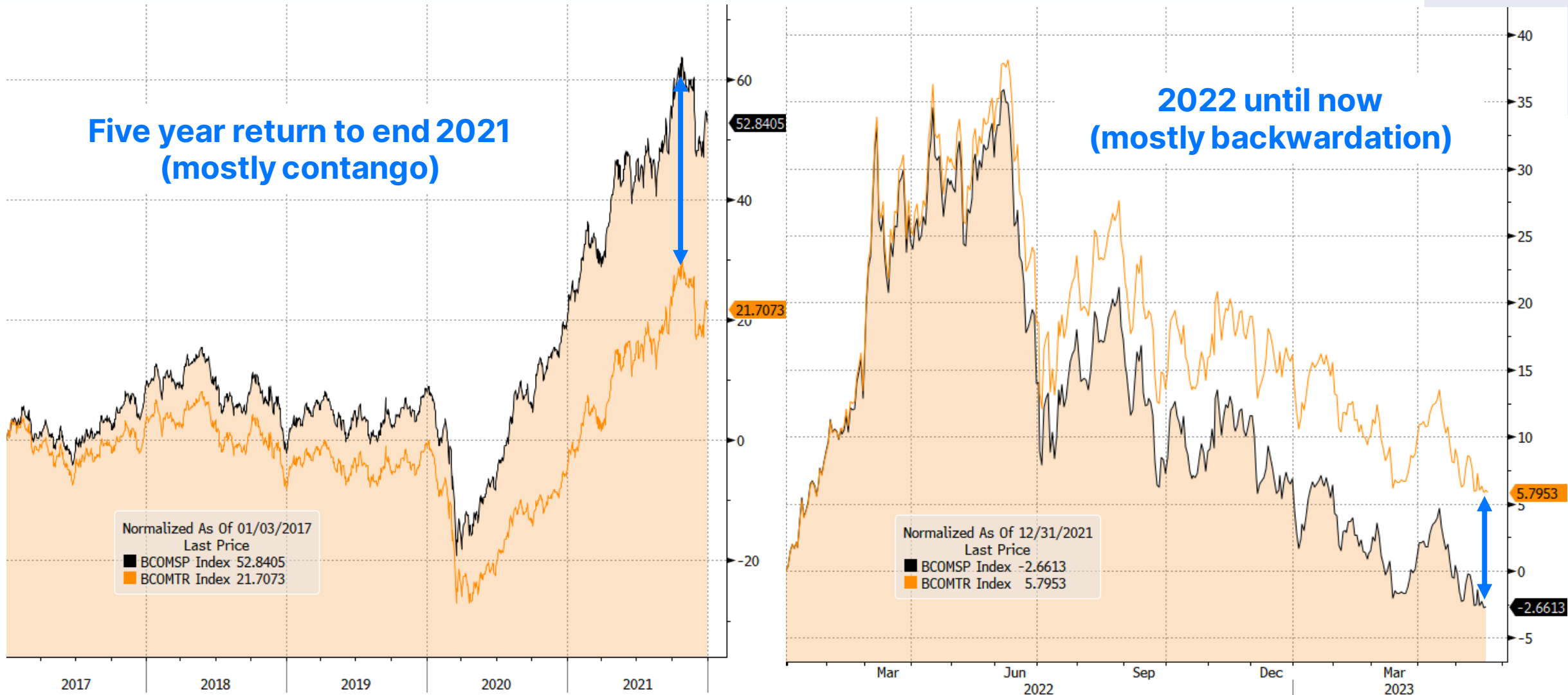
CFD	Gold June 2023			
	29-May-2023 GOLDJUN23...			
Net change	% change	High	Low	
-11.27	-0.57%	1,974.15	1,956.14	
Realtime prices Open				
Type	<	Quick Trade	>	
Troy Oz.	-	1	+	
SELL		BUY		
1,962.14		1,962.74		
Market order	0.6	Market order		
Price Tolerance - Off +				
Hide Details				
Trade fees			0 / 0 USD	
Nominal value			1,962.14 / 1,962.74 USD	
Initial margin available			-5,276.87 EUR	
Initial margin impact			72.67 / 72.67 EUR	
Maintenance margin impact			63.59 / 63.59 EUR	
Expiry date			29-May-2023 15:00 GMT	
Duration			Day Order	

vs

Backwardation vs contango, tight vs plenty of supply



Impact on commodity ETF's return



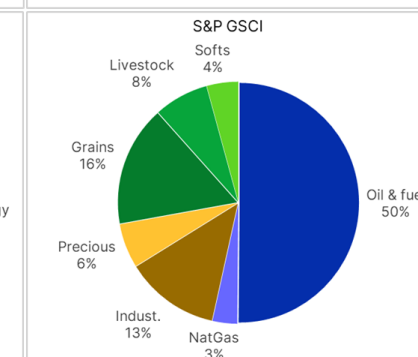
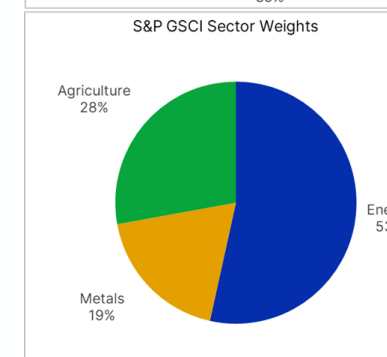
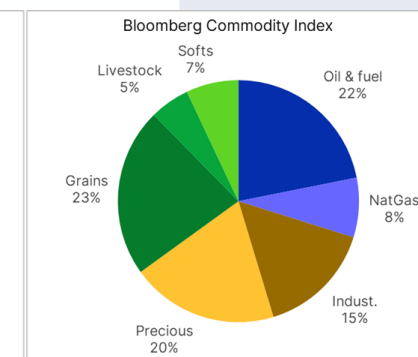
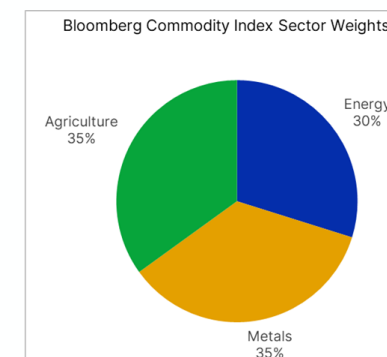
Direct exposure via commodity ETC's

5/23/2023				Size & flows, Mn \$			Performance, %		
UCITS Eligible ETFs	Tracking	Saxo Ticker	Currency	Mkt Cap	1 Mth	3 Mth	MTD	YTD	1 yr
iShares Physical Gold	Spot Gold	IGLN:xlon	USD	15,693	274.1	1297.0	-0.8	8.4	6.4
WisdomTree Brent Crude Oil	BCOM Brent Index	BRNT:xlon	USD	2,249	60.1	177.2	-4.8	-6.8	-18.7
iShares Physical Silver	Spot Silver	ISLN:xlon	USD	590	36.6	26.7	-5.1	-1.1	8.0
WisdomTree Copper (London)	BCOM Copper Index	COPA:xlon	USD	1,506	23.0	272.2	-5.0	-3.5	-14.5
WisdomTree Natural Gas	BCOM NatGas Index	NGAS:xlon	USD	149	6.6	74.5	-1.8	-52.9	-76.2
WisdomTree Platinum	BCOM WTI Index	CRUD:xlon	USD	455	-6.1	-3.8	-0.3	0.8	11.1
iShares BCOM Enhanced Roll	BCOM Enhanced Roll	ROLL:xlon	USD	1,205	-14.6	589.3	-2.8	-5.7	-14.2
WisdomTree Agriculture	BCOM Ag Index	AIGA:xlon	USD	266	-17.7	-15.0	-1.4	-4.2	-13.9
Invesco BCOM	BCOM Total Return	CMOD:xlon	USD	1,850	-28.7	258.9	-2.9	-9.1	-21.5
WisdomTree WTI Crude Oil	BCOM WTI Index	CRUD:xlon	USD	591	-32.6	-199.2	-4.8	-6.6	-22.9
iShares Div Commodity Swap	BCOM Total Return	ICOM:xlon	USD	1,563	-34.0	87.2	-2.7	-8.9	-21.2
WisdomTree Industrials	BCOM Ind Index	AIGI:xlon	USD	482	-84.5	-91.5	-6.1	-13.2	-21.8

Non-UCITS ETFs				Size & flows, Mn \$			Performance, %		
Non-UCITS ETFs	Tracking	Saxo Ticker	Currency	Mkt Cap	1 Mth	3 Mth	MTD	YTD	1 yr
SPDR Gold Shares	Spot Gold	GLD:arcx	USD	59,836	1310.2	1628.4	-0.9	8.0	6.0
United States Oil Fund *	WTI Crude Oil	USO:arcx *	USD	1,631	324.0	-6.2	-5.3	-8.8	-22.0
iShares Silver Trust	Spot Silver	SLV:arcx	USD	11,119	202.6	-271.6	-5.8	-1.6	7.8
iShares Gold Trust	Spot Gold	IAU:arcx	USD	28,891	181.4	717.4	-0.8	8.1	6.1
ProShares 2X WTI	BCOM WTI Index	UCO:arcx*	USD	751	153.2	-28.2	-10.7	-20.7	-45.5
Aberdeen Phys Gold Shares	Gold Bullion	SGOL:arcx	USD	2,817	80.0	212.6	-0.9	8.0	6.2
Aberdeen Phys Platinum Shares	Platinum Bullion	PPLT:arcx	USD	1,053	29.4	-32.1	-0.5	-0.4	11.1
Invesco DB Agriculture Fund *	DBIQ Div. Agri Index	DBA:arcx *	USD	882	-25.3	-123.9	-0.9	3.0	-7.5
iShares S&P GSCI *	S&P GSCI TR	GSG:arcx *	USD	983	-28.7	-55.2	-3.4	-9.4	-21.7
US NatGas Fund *	Natural Gas	UNG:arcx *	USD	1,138	-32.7	-16.5	-0.1	-50.4	-76.7
iPath BBG Commodity Index	BBG Commodity TR	DJP:arcx	USD	580	-74.8	-129.5	-3.6	-10.6	-24.1
ProShares 2X Natural Gas	BCOM NatGas Index	BOIL:arcx*	USD	1,007	-92.1	40.6	-3.3	-81.6	-97.3
Invesco DB Commodity Index	DBIQ Opt Yield	DBC:arcx *	USD	2,003	-95.5	-251.6	-3.5	-7.8	-19.3

Source: Bloomberg, Saxo

* Publicly Traded Partnerships (PTP) only offered by Saxo as CFD's



Commodities in the equity market

Mining and energy – where is agriculture?

GICS®



as of March 17, 2023

The benefit of commodity stocks is that companies can create shareholder return regardless of the shape of the forward curve!

Sector	Industry Group	Industry	Sub-Industry		
10	Energy	101010	Energy Equipment & Services	10101010 Oil & Gas Drilling	
			10101020 Oil & Gas Equipment & Services		
			10102010 Integrated Oil & Gas		
			10102020 Oil & Gas Exploration & Production		
			10102030 Oil & Gas Refining & Marketing		
		101020	Oil, Gas & Consumable Fuels	10102040 Oil & Gas Storage & Transportation	
			10102050 Coal & Consumable Fuels		
			151010	Chemicals	15101010 Commodity Chemicals
					15101020 Diversified Chemicals
					15101030 Fertilizers & Agricultural Chemicals
15101040 Industrial Gases					
15101050 Specialty Chemicals					
151020	Construction Materials	15102010 Construction Materials			
		151030	Containers & Packaging	15103010 Metal, Glass & Plastic Containers	
15103020 Paper & Plastic Packaging Products & Materials					
15	Materials	151040	Metals & Mining	15104010 Aluminum	
				15104020 Diversified Metals & Mining	
				15104025 Copper	
				15104030 Gold	
				15104040 Precious Metals & Minerals	
		15104045 Silver			
		15104050 Steel			
		151050	Paper & Forest Products	15105010 Forest Products	
				15105020 Paper Products	

Agriculture is mostly chemicals and machinery

iShares MSCI Agriculture Producers ... Latest Available Portfolio Filing Portfolio Filing Look-Through Creation Unit

Type Fund: ETF Asset Class Equity Cash Pos 1.13M USD Create/Redeem Fee 5100 USD

Historical View Periodicity Quarterly 2022 Q3 - 2023 Q2 Field Position

Group By None Show Asset Type All Currency USD Total Curr Mkt Val 234.9M Num of Holdings 173

Security	Ticker	Source	Position	Pos Chg	% Out	% Net	Curr MV	Rpt MV	Filing Da...
1) Deere & Co	DE US	ETF	131,969	0	.04	20.42	47.57MLN	47.98MLN	05/19/23
2) Corteva Inc	CTVA US	ETF	328,849	0	.05	7.97	18.70MLN	18.73MLN	05/19/23
3) Archer-Daniels-Midland Co	ADM US	ETF	252,834	0	.05	7.88	18.57MLN	18.52MLN	05/19/23
4) Nutrien Ltd	NTR CN	ETF	239,418	0	.05	6.32	14.80MLN	14.84MLN	05/19/23
5) Lamb Weston Holdings Inc	LW US	ETF	66,199	0	.05	3.23	7.40MLN	7.58MLN	05/19/23
6) Kubota Corp	6326 JP	ETF	465,200	0	.04	2.89	6.78MLN	6.78MLN	05/19/23
7) CNH Industrial NV Class A	CNHI US	ETF	470,980	0	.04	2.80	6.59MLN	6.59MLN	05/19/23
8) FMC Corp	FMC US	ETF	57,977	0	.05	2.69	6.25MLN	6.31MLN	05/19/23
9) Bunge Ltd	BG US	ETF	68,946	0	.05	2.65	6.24MLN	6.24MLN	05/19/23
10) CF Industries Holdings Inc	CF US	ETF	90,297	0	.05	2.54	6.05MLN	5.98MLN	05/19/23
11) Mosaic Co/The	MOS US	ETF	156,708	0	.05	2.38	5.64MLN	5.60MLN	05/19/23
12) Toro Co/The	TTC US	ETF	47,881	0	.05	2.14	5.05MLN	5.04MLN	05/19/23
13) Darling Ingredients Inc	DAR US	ETF	73,766	0	.05	2.03	4.77MLN	4.78MLN	05/19/23
14) Sociedad Quimica y Minera de Chile SA Series B	SQM/B CI	ETF	65,608	0	.05	2.00	4.67MLN	4.69MLN	05/19/23
15) SABIC Agri-Nutrients Co	SAFCO AB	ETF	98,581	0	.02	1.45	3.41MLN	3.41MLN	05/19/23
16) Ingredion Inc	INGR US	ETF	30,131	0	.05	1.44	3.36MLN	3.39MLN	05/19/23
17) AGCO Corp	AGCO US	ETF	29,129	0	.04	1.42	3.34MLN	3.33MLN	05/19/23
18) Mowi ASA	MOWI NO	ETF	190,096	0	.04	1.39	3.23MLN	3.28MLN	05/19/23
19) Yara International ASA	YAR NO	ETF	75,842	0	.03	1.25	2.92MLN	2.95MLN	05/19/23
20) Wilmar International Ltd	WIL SP	ETF	884,200	0	.01	1.11	2.61MLN	2.62MLN	05/19/23
21) Tata Consumer Products Ltd	TATACONS	ETF	257,035	0	.03	1.01	2.39MLN	2.38MLN	05/19/23

Source: Bloomberg

ETF iShares MSCI Agriculture Producers E... VEG:arcx USD

Bid	Ask	Last traded	Net change
38.9600	39.0200	38.9700	-0.1271

New York Stock Exchange (ARCA) • Closed

Type < Limit >

Buy/Sell < Buy >

Shares 100 +

Price 39.0200 +

Duration < G.T.C. >

Add Take profit / Stop loss

Place order

Hide Details

Trade fees 2.00 USD

Nominal value 3,902.00 USD

Energy stocks are mostly oil and gas majors

Xtrackers MSCI World Energy UCITS E... Latest Available Portfolio Filing Portfolio Filing Look-Through Creation Unit

Type Fund: ETF Asset Class Equity Cash Pos -3.1M USD

Historical View Periodicity Quarterly 2022 Q3 - 2023 Q2 Field Position

Group By None Show Asset Type All Currency USD Total Curr Mkt Val 978.3M Num of Holdings 68

Security	Ticker	Source	Position	Pos Chg	% Out	% Net	Curr MV	Rpt MV	Filing Da...
1) Exxon Mobil Corp	XOM US	ETF	1,557,467	-62,523	.04	16.94	163.49MLN	164.73MLN	05/22/23
2) Chevron Corp	CVX US	ETF	694,708	-27,899	.04	11.00	105.90MLN	106.99MLN	05/22/23
3) Shell PLC	SHEL LN	ETF	2,674,553	-107,291	.04	8.17	79.33MLN	79.41MLN	05/22/23
4) TotalEnergies SE	TTE FP	ETF	942,951	-37,739	.04	5.82	56.83MLN	56.55MLN	05/22/23
5) ConocoPhillips	COP US	ETF	471,275	-18,899	.04	4.88	48.89MLN	47.48MLN	05/22/23
6) BP PLC	BP/ LN	ETF	6,877,148	-275,263	.04	4.22	41.02MLN	41.00MLN	05/22/23
7) Enbridge Inc	ENB CN	ETF	767,386	-30,716	.04	2.93	28.38MLN	28.45MLN	05/22/23
8) EOG Resources Inc	EOG US	ETF	222,166	-8,910	.04	2.56	25.23MLN	24.89MLN	05/22/23
9) Schlumberger NV	SLB US	ETF	536,325	-21,509	.04	2.47	24.67MLN	24.05MLN	05/22/23
10) Canadian Natural Resources Ltd	CNQ CN	ETF	419,507	-16,883	.04	2.42	23.86MLN	23.55MLN	05/22/23
11) Marathon Petroleum Corp	MPC US	ETF	177,236	-7,160	.04	2.02	19.61MLN	19.67MLN	05/22/23
12) Pioneer Natural Resources Co	PXD US	ETF	85,368	-3,425	.04	1.79	18.02MLN	17.41MLN	05/22/23
13) Phillips 66	PSX US	ETF	178,767	-7,169	.04	1.77	17.08MLN	17.21MLN	05/22/23
14) Woodside Energy Group Ltd	WDS AU	ETF	719,549	-28,803	.04	1.67	16.58MLN	16.21MLN	05/22/23
15) Valero Energy Corp	VLO US	ETF	145,822	-5,849	.04	1.67	16.45MLN	16.27MLN	05/22/23
16) Occidental Petroleum Corp	OXY US	ETF	275,020	-11,029	.03	1.65	16.24MLN	16.02MLN	05/22/23
17) TC Energy Corp	TRP CN	ETF	383,509	-15,349	.04	1.58	15.40MLN	15.38MLN	05/22/23
18) Suncor Energy Inc	SU CN	ETF	513,167	-20,537	.04	1.51	14.72MLN	14.64MLN	05/22/23
19) Hess Corp	HES US	ETF	104,919	-4,211	.03	1.44	13.96MLN	13.97MLN	05/22/23
20) Eni SpA	ENI IM	ETF	947,565	-37,920	.03	1.40	13.55MLN	13.61MLN	05/22/23
21) Williams Cos Inc/The	WMB US	ETF	460,676	-18,483	.04	1.38	13.47MLN	13.46MLN	05/22/23
22) Kinder Morgan Inc	KMI US	ETF	764,927	-30,682	.03	1.30	12.64MLN	12.64MLN	05/22/23

ETF Xtrackers MSCI World Energy UCITS ... XDW0:xetr EUR

Bid 40.030 Ask 40.060 Last traded 40.040 Net change 0.110 %

Deutsche Börse (Indices & ETFs) Open

Type < Limit >

Buy/Sell < Buy >

Shares 100 +

Price 40.060 +

Duration < G.T.C. >

Add Take profit / Stop loss

Place order

Hide Details

Trade fees 4.01 EUR

Nominal value 4,006.00 EUR

Source: Bloomberg

Mining is exposure to iron ore, aluminum, copper, and gold

VanEck Global Mining UCITS ETF Latest Available Portfolio Filing Portfolio Filing Look-Through Creation Unit

Type Fund: ETF Asset Class Equity Cash Pos 3.19M USD

Historical View Periodicity Quarterly 2022 Q3 - 2023 Q2 Field Position

Group By None Show Asset Type All Currency USD Total Curr Mkt Val 444.1M Num of Holdings 185

Security	Ticker	Source	Position	Pos Chg	% Out	% Net	Curr MV	Rpt MV	Filing Da...
1) BHP Group Ltd	BHP AU	ETF	1,302,024	0	.03	8.67	37.98MLN	38.23MLN	05/22/23
2) Rio Tinto PLC RIO LN Shares	RIO LN	ETF	410,059	0	.03	5.70	25.07MLN	25.14MLN	05/22/23
3) Glencore PLC	GLEN LN	ETF	4,388,039	0	.04	5.37	23.62MLN	23.68MLN	05/22/23
4) Freeport-McMoRan Inc	FCX US	ETF	602,840	0	.04	4.87	21.47MLN	21.47MLN	05/22/23
5) Vale SA - Depository Receipt	VALE US	ETF	1,539,895	0	.03	4.78	21.08MLN	21.08MLN	05/22/23
6) Newmont Corp	NEM US	ETF	370,942	0	.05	3.04	10.00MLN	10.00MLN	05/22/23
7) Anglo American PLC	AAL LN	ETF	543,467	0	.04	3.62	15.92MLN	15.97MLN	05/22/23
8) Barrick Gold Corp	ABX CN	ETF	818,252	0	.05	3.31	14.58MLN	14.61MLN	05/22/23
9) Franco-Nevada Corp	FNV CN	ETF	88,948	0	.05	3.09	13.58MLN	13.61MLN	05/22/23
10) Agnico Eagle Mines Ltd	AEM CN	ETF	229,568	0	.05	2.82	12.39MLN	12.41MLN	05/22/23
11) Rio Tinto Ltd Ordinary Shares	RIO AU	ETF	143,694	0	.04	2.37	10.47MLN	10.43MLN	05/22/23
12) Wheaton Precious Metals Corp	WPM CN	ETF	211,111	0	.05	2.30	10.12MLN	10.14MLN	05/22/23
13) Fortescue Metals Group Ltd	FMG AU	ETF	735,972	0	.02	2.28	10.03MLN	10.05MLN	05/22/23
14) Teck Resources Ltd Class B	TECK/B CN	ETF	211,543	0	.04	2.03	8.96MLN	8.97MLN	05/22/23
15) Newcrest Mining Ltd	NCM AU	ETF	405,856	0	.05	1.65	7.15MLN	7.27MLN	05/22/23
16) Gold Fields Ltd	GFI SJ	ETF	416,209	0	.05	1.46	6.43MLN	6.43MLN	05/22/23
17) Grupo Mexico SAB de CV	GMEXICOB ...	ETF	1,440,400	0	.02	1.42	6.26MLN	6.26MLN	05/22/23
18) First Quantum Minerals Ltd	FM CN	ETF	260,691	0	.04	1.39	6.10MLN	6.11MLN	05/22/23
19) China Shenhua Energy Co Ltd H Shares	1088 HK	ETF	1,578,500	0	.05	1.26	5.61MLN	5.57MLN	05/22/23
20) South32 Ltd	S32 AU	ETF	2,051,784	0	.05	1.25	5.48MLN	5.49MLN	05/22/23
21) AngloGold Ashanti Ltd Ordinary Shares	ANG SJ	ETF	193,702	0	.05	1.08	4.76MLN	4.77MLN	05/22/23
22) Northern Star Resources Ltd	NST AU	ETF	531,609	0	.05	1.06	4.63MLN	4.66MLN	05/22/23
23) Boliden AB	BOL SS	ETF	125,519	0	.05	.92	4.04MLN	4.07MLN	05/22/23
24) Royal Gold Inc	RGD US	ETF	30,588	0	.05	.89	3.94MLN	3.94MLN	05/22/23
25) Norsk Hydro ASA	NHY NO	ETF	610,906	0	.03	.89	3.88MLN	3.90MLN	05/22/23

Source: Bloomberg

ETF VanEck Global Mining UCITS ETF
GDIG:xmil EUR

Bid 28.045 Ask 28.130 Last traded 28.035 Net change -0.245 %

Borsa Italiana/Milan Stock Exchange Open

Type < Limit >

Buy/Sell < Buy >

Shares ☰ — 100 +

Price — 28.110 +

Duration < G.T.C. >

Add Take profit / Stop loss

Place order

Hide Details

Trade fees ? 2.81 EUR

Nominal value 2,811.00 EUR

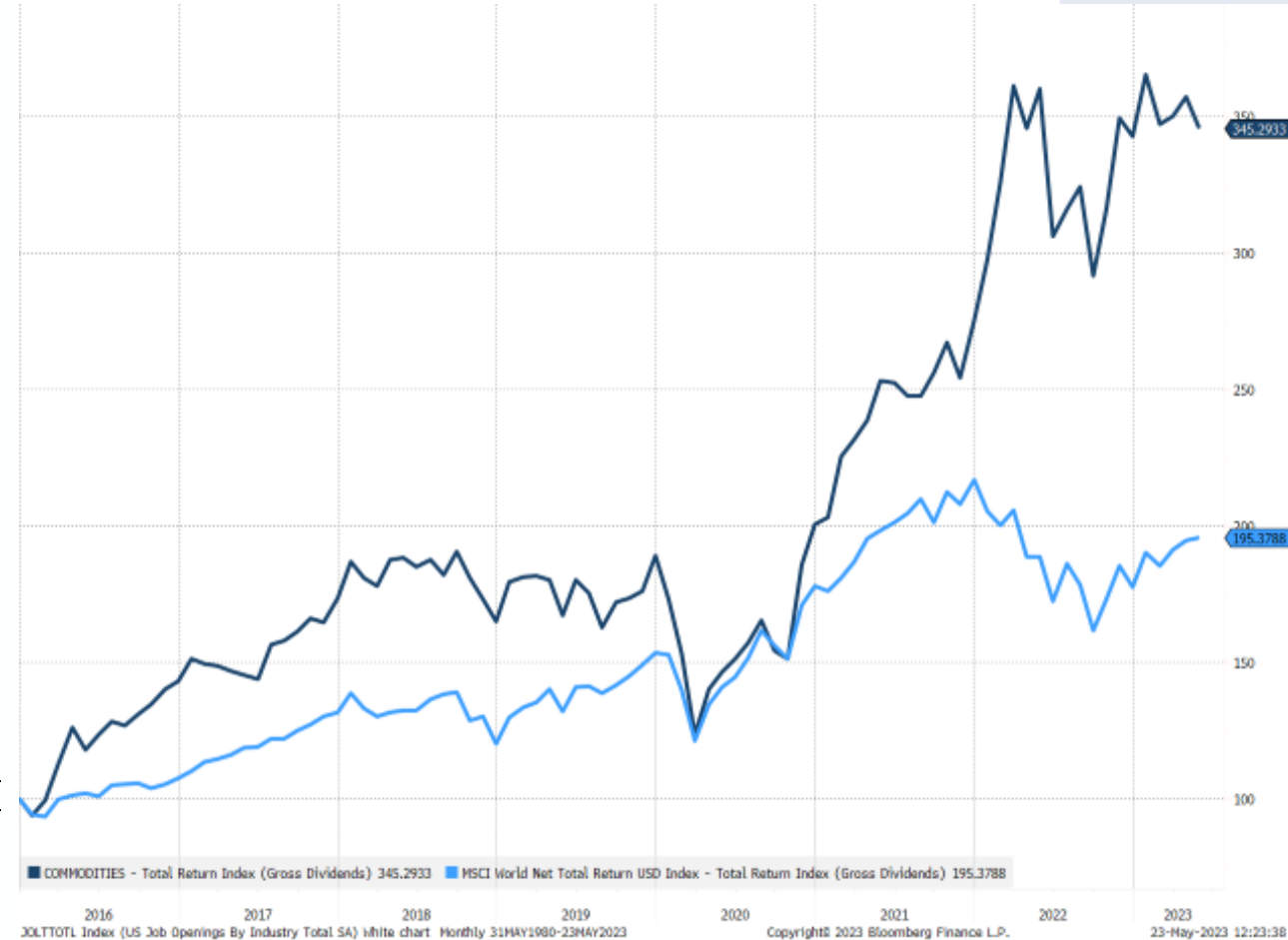
Saxo's commodities theme basket

Saxo's commodities basket

Name	Category	Mkt Cap (USD mn.)	Sales growth (%)	EBIT margin (%)	1W return (%)	5Y return (%)	Diff to PT (%)
Glencore PLC	Diversified mining	66,506	25.6	9.7	-0.5	42.9	37.6
Bunge Ltd	Agribusiness	13,624	7.4	3.4	2.2	50.8	37.5
Newmont Corp	Gold	34,436	-6.5	-0.8	-4.0	26.8	31.0
Wilmar International Ltd	Palm oil & sugar	18,388	11.6	4.6	-0.5	46.4	28.4
Archer-Daniels-Midland Co	Nutrition	39,998	13.6	4.2	0.4	87.8	27.2
ConocoPhillips	Oil & gas EP (*)	125,708	40.5	30.9	5.8	79.2	26.5
Mosaic Co/The	Fertilizer	11,949	34.5	21.7	2.0	35.8	26.5
Mowi ASA	Fish farming	8,767	21.8	21.5	0.4	31.9	22.8
Exxon Mobil Corp	Integrated oil & gas	424,392	28.6	18.1	2.4	69.5	20.9
Norsk Hydro ASA	Aluminum	12,882	27.7	13.2	-0.9	81.4	20.3
Shell PLC	Integrated oil & gas	202,718	32.4	16.7	1.9	17.3	19.6
Equinor ASA	Integrated oil & gas	87,040	30.8	50.9	0.7	83.0	19.3
Canadian Natural Resources Ltd	Oil & gas EP (*)	62,438	18.2	32.7	3.6	119.9	17.9
PetroChina Co Ltd	Integrated oil & gas	183,197	12.3	7.6	-1.6	18.0	14.4
Petroleo Brasileiro SA	Integrated oil & gas	71,859	25.7	45.3	-2.0	100.5	14.2
Rio Tinto Ltd	Iron ore	102,803	-12.5	35.9	0.6	131.1	10.7
BHP Group Ltd	Diversified mining	146,842	-4.9	48.9	-0.6	155.6	6.7
China Shenhua Energy Co Ltd	Coal	83,783	-1.2	28.0	-0.9	119.2	3.3
Svenska Cellulosa AB SCA	Forestry	9,788	4.7	39.1	2.5	61.4	2.5
Southern Copper Corp	Copper	53,646	-9.7	42.9	-0.1	73.7	-8.7
Aggregate / median		1,760,765	15.9	21.6	0.4	69.5	20.9

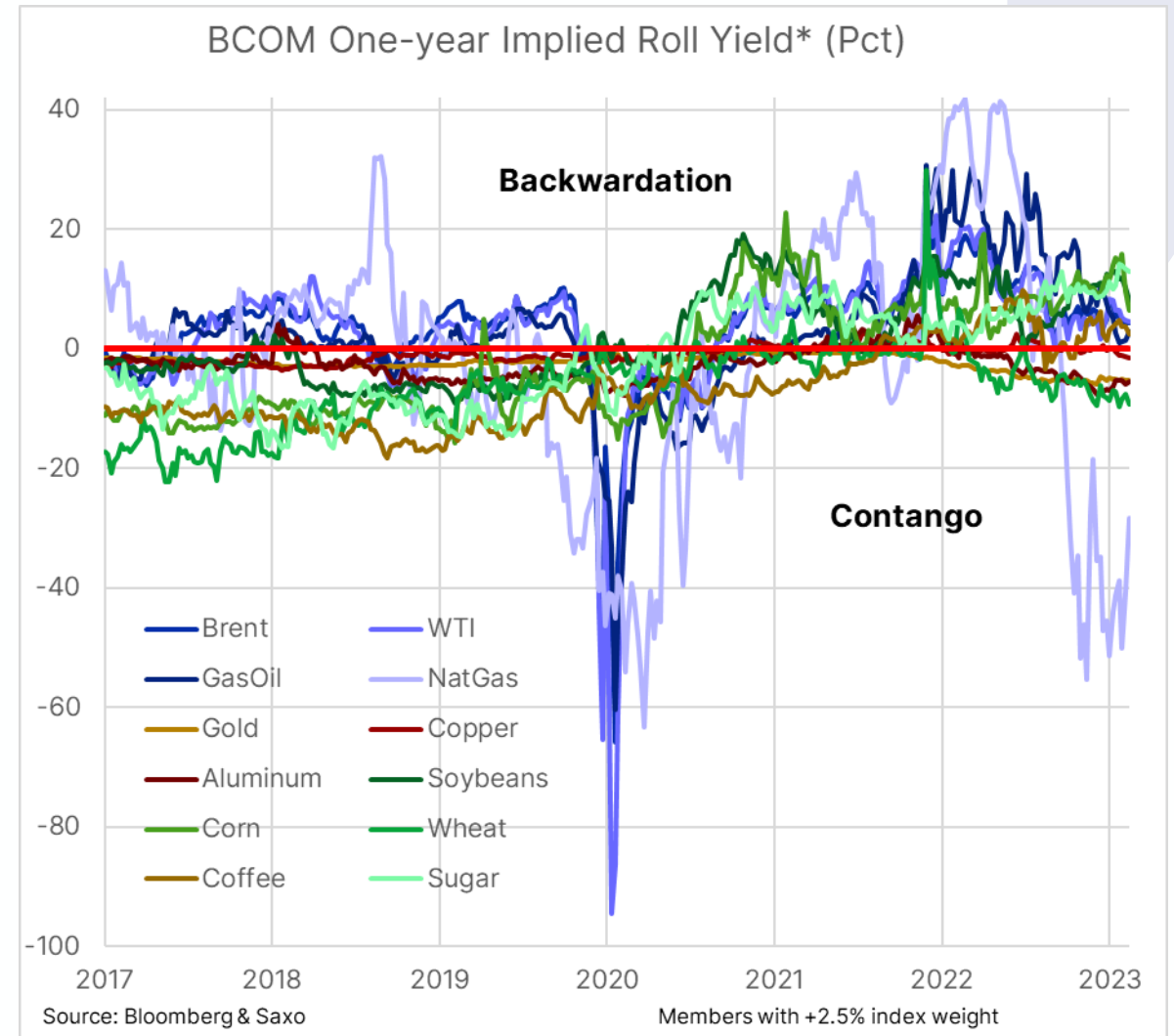
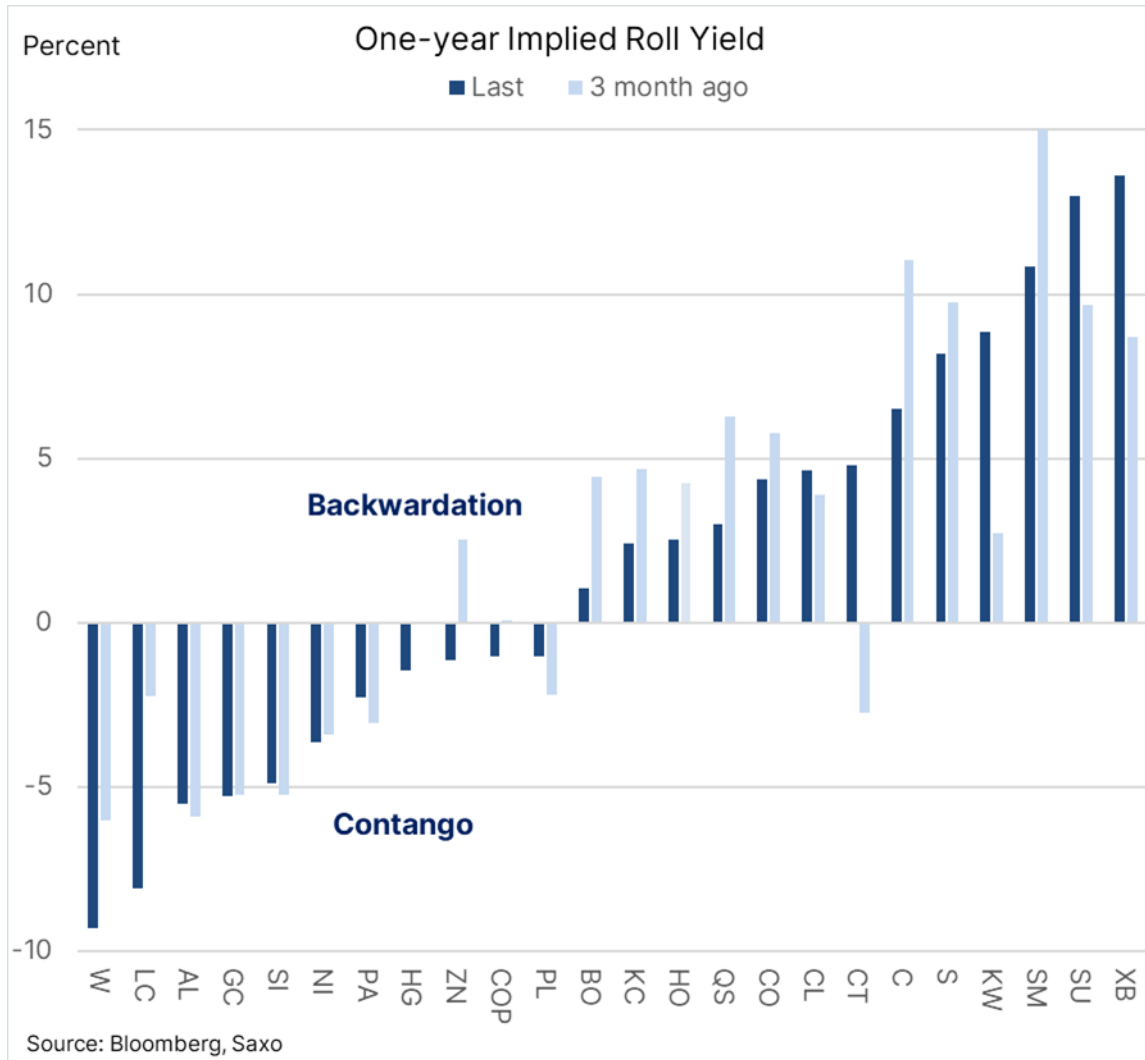
Source: Bloomberg and Saxo Group

* Oil & gas EP stands for oil and gas exploration and production

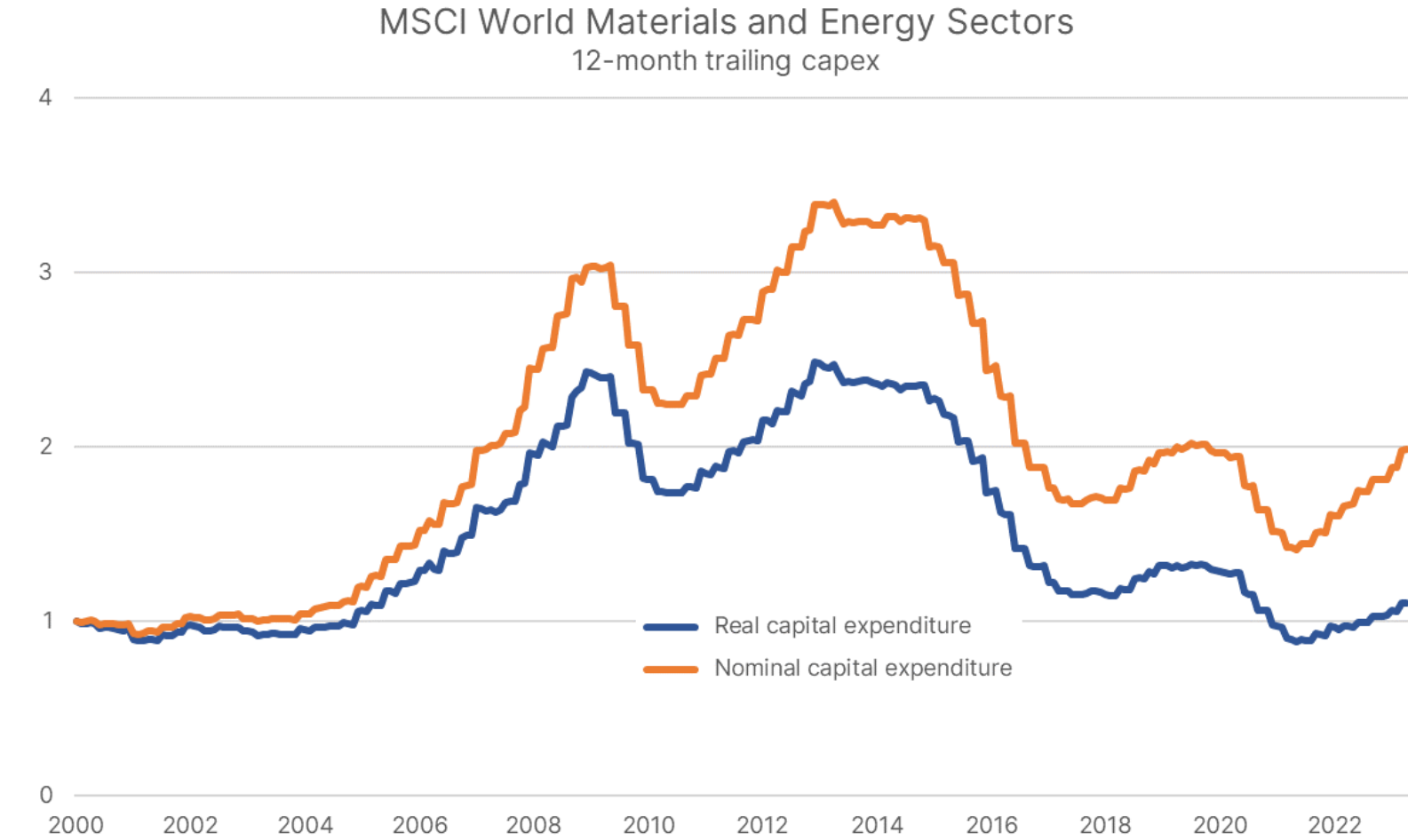


Source: Bloomberg

Tightness remains despite current price weakness



Real capital expenditures are still low...



Source: Bloomberg and Saxo Group

Green transformation heavily dependent on supply of many key metals

Batteries:

Copper, Graphite, Silicon, Titanium, Aluminum, Niobium, Cobalt, Lithium, Manganese, Nickel

Electrical traction motors:

Boron, Dysprosium, Neodymium, Praseodymium, Iron, Silicon, Aluminum, Copper, Chromium, Molybdenum

Solar PV Technologies:

Aluminum, Iron, Lead, Nickel, Zinc, Boron, Germanium, Silicon, Silver, Cadmium, Copper, Gallium, Indium, Molybdenum, Selenium, Tin, Tellurium.

Wind turbines:

Iron, Chromium, Manganese, Molybdenum, Nickel, Niobium, Aluminum, Copper, Lead, Boron, Dysprosium, Neodymium, Praseodymium

The Hydrogen economy: Electrolysis and Fuel cells

Cobalt, Palladium, Platinum, Graphite, Aluminum, Copper, Nickel, Strontium, Titanium

Nuclear Power

Requires ten times less steel and concrete compared with similar output generated by wind & hydro (US DOE)

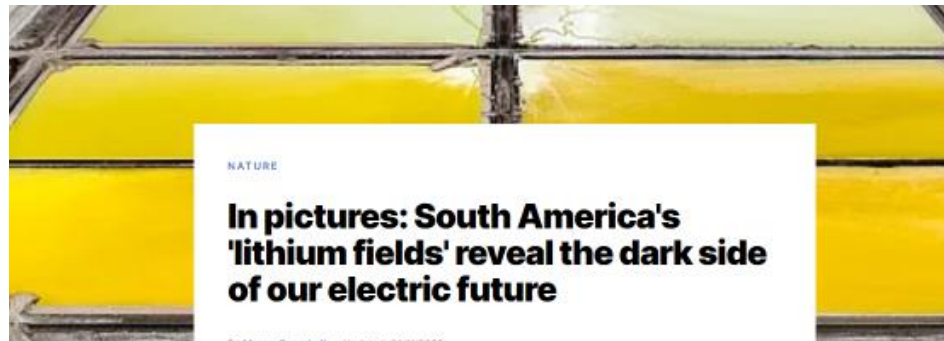
Critical raw materials: Minor metals that play an outsized role given their importance

Electrification: Lithium and copper exposure through stocks

Saxo's lithium basket

Name	Mkt Cap (USD mn.)	Sales growth (%)	EBIT margin (%)	1W return (%)	5Y return (%)	Diff to PT (%)
Ganfeng Lithium Group Co Ltd	17,743	207.6	37.1	-8.9	NA	39.2
Sociedad Quimica y Minera de Chile SA	18,896	151.6	49.6	-3.2	84.5	37.0
Tianqi Lithium Corp	17,638	428.7	85.9	-6.4	NA	36.9
Livent Corp	4,361	95.5	46.5	-2.5	NA	35.1
Albemarle Corp	24,230	141.9	37.2	0.4	131.9	28.5
Mineral Resources Ltd	9,502	24.1	28.1	0.9	420.6	11.9
IGO Ltd	7,387	81.4	95.1	-0.8	250.0	6.7
Allkem Ltd	6,385	370.7	70.4	2.2	151.6	5.4
Pilbara Minerals Ltd	9,470	653.6	77.9	-0.4	504.3	-1.7
Aggregate / median	115,612	151.6	49.6	-0.8	200.8	28.5

Source: Bloomberg and Saxo Group



ENERGY, POLLUTION

The Environmental Impacts of Lithium and Cobalt Mining

BY MARCH ZHENG | AMERICAS | MAR 31ST 2023 | 5 MINS

Saxo's copper basket

Name	Market cap (USD mn)	F12M EV/EBITDA	Revenue growth (%)	Price-to-target (%)	5Y return (USD)	Revenue from copper (%)
Antofagasta PLC	17,236	5.9	-21.5	6.2	47.4	84.8
First Quantum Minerals Ltd	16,208	6.9	-9.4	15.3	47.3	84.2
Southern Copper Corp	53,646	9.3	-9.7	-9.2	73.7	81.6
KGHM Polska Miedz SA	5,382	4.2	7.5	-6.7	9.8	73.8
Jiangxi Copper Co Ltd	7,696	7.3	4.9	27.4	22.4	71.0
OZ Minerals Ltd	6,295	10.3	-8.4	-6.0	NA	60.0
Glencore PLC *	66,611	4.1	25.6	33.0	32.3	39.0
Boliden AB	8,796	4.8	15.3	12.3	17.7	35.0
Freeport-McMoRan Inc	51,054	6.2	-12.3	31.9	117.4	33.7
Teck Resources Ltd	22,036	4.6	13.3	22.0	65.4	27.0
BHP Group Ltd	146,887	5.2	-4.9	4.5	123.5	26.0
Zijin Mining Group Co Ltd	39,236	8.1	15.7	46.9	254.7	22.7
Anglo American PLC	39,359	3.9	-15.5	37.2	63.5	22.3
Rio Tinto PLC	102,972	4.5	-12.5	20.1	71.1	11.5
Vale SA	60,872	3.5	-23.7	35.1	37.4	5.5
Aggregate / median	644,286	5.2	-8.4	20.1	55.5	35.0

Source: Bloomberg and Saxo Group

* EBITDA contribution as Glencore does not breakdown revenue split on metals

According to its 2021 report (revised in March 2022) "The Role of Critical Minerals in Clean Energy Transitions" by the International Energy Agency (IEA), the world will need between 1.7 to 2.7 times as much copper in 2040 as it produces today. 28 Apr 2023

F Forbes
<https://www.forbes.com/sites/jimvinoski/2023/04/28/>

There's Not Enough Copper For Our Electrification Plans—And ...

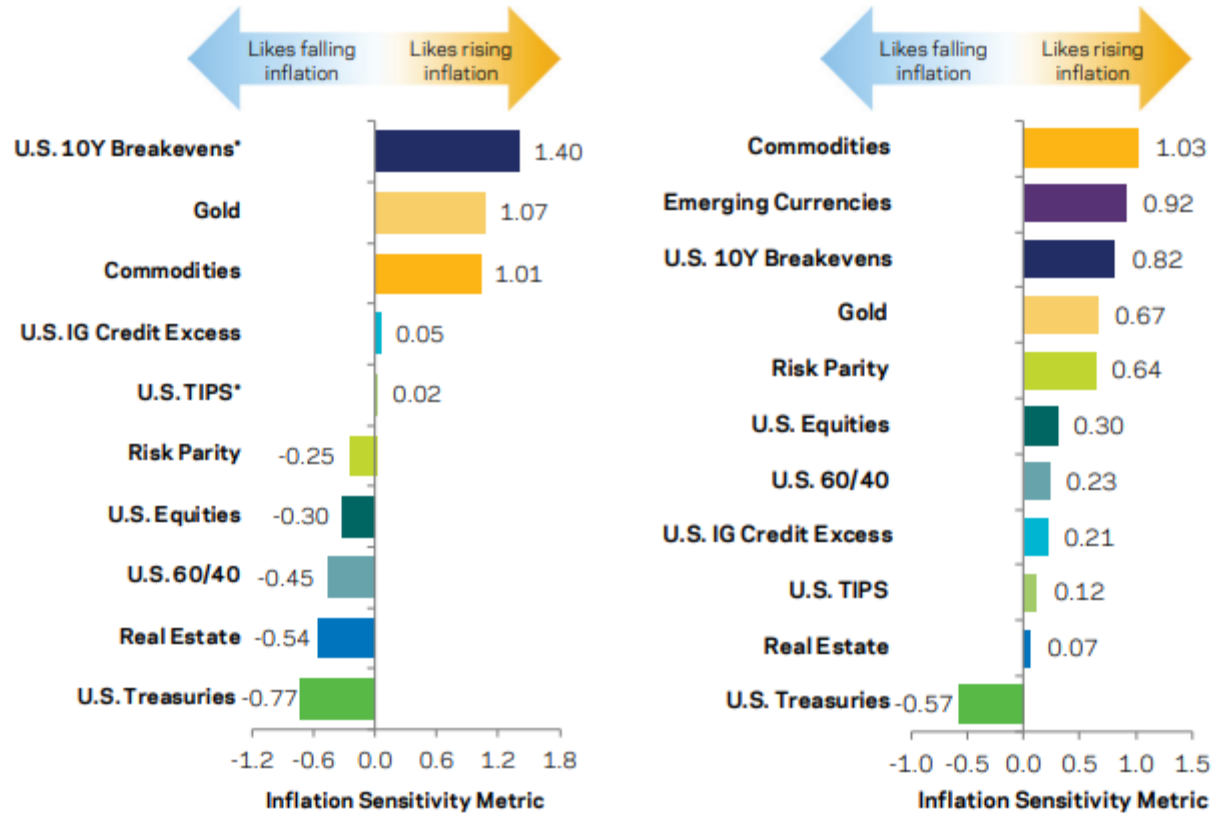
SAXO
BE INVESTED

Commodities play a role in portfolios' asset allocation

Exhibit 5: U.S. Inflation Sensitivity Metric for Major Asset Classes

a. January 1972 - June 2020

b. March 1997 - June 2020



* Before March 1997, TIPS and Breakevens are synthetic series built using survey-based inflation expectations.

Source: AQR, Bloomberg, Survey of Professional Forecasters, U.S. Bureau of Labor Statistics. Inflation sensitivity metric controls for growth exposure. See Appendix for details of metric and asset class proxies.

2023 and beyond: Continued upside potentials in commodities

What drives the current commodity bull cycle?

- **Green transformation** supporting demand for industrial metals towards “new” energy
- **Structural inflation** of 3-4% driving demand for tangible assets
- **A weaker dollar**
- **Tight supply of key commodities** due to lower investment appetite driven by ESG, investor and lending restrictions

Duration determined by:

- Prolonged period of mismatch between rising demand and inelastic supply
- Supply/demand imbalances take years to correct
- High start-up capex for new projects and falling ore grades

